



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,458	09/28/2005	Kazuo Kubota	0425-1178PUS1	3849

2292 7590 07/23/2007
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
----------	--------------

1731

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

07/23/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/525,458	Applicant(s) KUBOTA ET AL.	
	Examiner Dennis Cordray	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-15 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's amendments, filed 4/27/2007, have overcome the rejection of Claims 1-4, 6-11, 13-16 and 18-20 under 35 U.S.C. 102(a or e) over Chen et al.

Applicant's arguments, see pp9-11, with respect to the rejections of Claims 5 and 17 under 35 U.S.C. 103(a) over Chen et al in view of others have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

Claim Rejections - 35 USC § 102 and 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5-10, 13-15 and 18-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Auhorn et al (4908240).

Auhorn et al discloses a composition for surface sizing paper comprising, by weight, 100 parts pigment, from 5 to 70 parts of a cationic aqueous polymer dispersion, and from 0.01 to 10 parts surfactant (Abs; col 1, line 65 to col 2, line 12). The polymer has a glass transition temperature from 5 to 80 °C (col 2, lines 46-48). Note that the instant claims are directed to a composition. The intended use of internal addition, as recited in the preamble of Claims 1 and 9, does not further limit the structure, thus is given no patentable weight.

The polymerizable monomer mixture comprises from 20-65 wt-% acrylonitrile, methacrylonitrile, methyl methacrylate and/or styrene; from 35-80 wt-% (meth)acrylates of monohydric saturated C₃-C₈ alcohols (i.e.-propyl acrylates, butyl acrylates, pentyl acrylates, etc.), vinyl acetate, vinyl propionate and/or 1,3-butadiene; and 0-10 wt-% other ethylenically unsaturated monomers (i.e.-acrylic acid, maleic acid, etc.) (col 4, lines 5-19 and 45-60). The disclosed monomers significantly overlay the claimed monomer-derived structural units.

In one embodiment, the polymerization can be conducted in the presence of a cationic emulsifier, which can be a low molecular weight polymer containing from 5 to 100% by weight of a nitrogen-containing monomer as copolymerized units (col 2, lines 56-58; col 3, lines 26-42; col 3, line 58 to col 4, line 8). Specific examples of nitrogen containing compounds disclosed include dimethylaminoethyl (meth)acrylate, diethylaminoethyl (meth)acrylate, dimethylaminopropyl (meth)acrylate, dibutylaminopropyl (meth)acrylate, dimethylaminoneopentyl acrylate, (meth)acrylamidodimethylpropylamine, methacrylamidodiethylpropylamine and their quaternary salts obtained using benzyl chloride, methyl chloride, ethyl chloride, and others (col 3, lines 26-42). The nitrogen content of the emulsifier can be calculated. Using, for example, dimethylaminoethyl acrylate quaternized with methyl chloride (molecular weight of 158 for the monomer unit without the chloride), the nitrogen content of the polymer ranges from 0.44 to 8.8 wt-%, which significantly overlays the claimed range. Using benzyl chloride as the quaternizing agent, the nitrogen content

Art Unit: 1731

ranges from 0.3 to 6 wt-%. For the other higher molecular weight monomers, the nitrogen content is even lower.

In a second embodiment, the polymerization dispersion comprises, by weight, 10-56 parts of the monomer mixture and 100 parts of a 1.5-25 wt-% aqueous solution of a cationic starch (col 4, lines 22-39). The proportion of starch to monomer mixture (or to polymer particles following the polymerization) significantly overlays the claimed composition. The degree of substitution of the cationic starch is from 0.01 to 0.1 mole of nitrogen per mole of glucose units (col 8, lines 18-20), or from 0.09-0.9 wt-% nitrogen.

Auhorn et al does not disclose the amount of cationic emulsifier relative to the particles; however, it would have been obvious to one of ordinary skill in the art to use a similar amount to that disclosed for the cationic starch to obtain the same emulsifying effect.

The composition, having a solids content from 5-60 wt-%, is applied to the surface of the paper in an amount from 0.5 to 4 g/m² (Abs; col 8, lines 53-57; col 9, lines 3-4). Examples are given of coating a paper (pulp sheet) having an uncoated basis weight of 60 g/m² (col 12, lines 29-31), thus the paper has a calculated polymer + starch content from about 0.4 to about 3 parts per 100 parts by weight of the sheet (calculated after subtracting the amount of pigment) which significantly overlays the claimed application amount.

The polymer particles produced have a mean diameter from 75 to 110 nm (0.075 to 0.11 μ m), which overlays the claimed particle size ranges (col 7, lines 10-12).

Auhorn et al does not disclose the claimed viscosity of the synthetic cationic polymer (low molecular weight cationic emulsifier). However, the disclosed low molecular weight cationic emulsifier has the claimed structure in some embodiments, a synthetic cationic polymer with a nitrogen content of less than 1 wt-%, thus will have the claimed properties. Where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Claims 1, 8 and 9 are product-by-process claims. The product of Auhorn et al appears to be the same as or similar to the claimed product, a composition comprising a natural or synthetic cationic polymer and polymer particles, and a paper comprising the composition, although produced by a different process. The burden therefore shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). "In the event any differences can be shown for the product of the product-by-process claims 1, 8 and 9 as opposed to the product taught by the reference Auhorn et al, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results: see also *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)"

Claims 1-4, 6-7, 10, 13-14 and 18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over De Wacker et al (4940741).

De Wacker et al discloses an aqueous emulsion comprising a polyvinyl acetate obtained by polymerizing in the presence of 6-10%, by weight of the polymer, of a cationic starch (col 3, lines 10-22 and 36-47). The emulsions are applied, at a solids content from 35-70% by weight, to a fiberboard by spraying or coating the surface (pulp sheet) (col 8, lines 7-11 and 50-54; col 11, lines 26-28).

De Wacker does not disclose the glass transition temperature of the polymer. The disclosed polymer comprises the same monomers as the claimed polymer, thus inherently has the claimed structure and properties or, at least, it would have been obvious to one of ordinary skill in the art that the polymer has the claimed properties for reasons given previously.

Claim Rejections - 35 USC § 103

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Auhorn et al in view of Niinikoski et al (6753377).

Niinikoski et al discloses an aqueous polymer dispersion comprising a polymer formed by polymerizing from 50-95% alkyl acrylates and styrene in the presence of from 5-50 % of a cationic starch having a degree of substitution from 0.01 to 1 (col 2, lines 49-57; col 3, lines 28-46; col 4, lines 12-15). The dispersion has a solids content from 10-60% (col 4, lines 8-11) and is applied either as a surface sizing treatment for paper or as an internal wet and dry strength agent by adding to the wet end (col 1, lines 4-10).

Art Unit: 1731

The art of Auhorn et al, Niinikoski et al and the instant invention is analogous as pertaining to the treatment of paper with a cationic starch and synthetic polymer particle. It would have been obvious to one of ordinary skill in the art at the time of the invention to add the cationic starch and polymer particle composition to the furnish in the process of Auhorn et al in view of Niinikoski et al to provide wet and dry strength to the paper produced.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M-F, 7:30-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


DRC


STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700